

## **BUILDING DIVISION**

## **PLAN CHECK NOTE**

**From: Building Plan Check**

**PCN #24**

**Previous Version: 12-10-2002**

**Date: 5-1-2008**

### **Subject: Suspended Ceiling Support and Bracing Systems**

#### **Code reference:**

2006 IBC 803.9 and 1613.1  
ASCE 7-05 13.3.1 and 13.5.6  
ASTM C 635 & 636  
CISCA Seismic Zones 3 & 4<sub>i</sub>

#### **Purpose:**

Suspended ceiling systems must be connected for vertical and lateral loads to the building structure in accordance with the currently adopted edition of the IBC. The referenced ASCE 7 stipulates specific requirements for Seismic Categories D through F, applicable to all of San Jose. Suspension systems must be analyzed and detailed to transfer ASCE 7 prescribed seismic forces to the building structural elements or the ceiling-structure boundary. Specific prescriptive detailing provisions provided below may be utilized in lieu of calculations and testing of components for conventional T-bar conditions.

#### **Requirements:**

Ceiling grid areas exceeding 1,000 s.f. require horizontal restraint to the building structure. Minimum prescriptive requirements provided in the Application section below apply in all scenarios. Detailed provisions per ASCE 7 13.5.6.2.2 item a., b., e., and g. apply to all grid conditions. (HD grid beams, perimeter closure angle, sprinkler sleeves, etc.). Grid areas exceeding 2,500 require grid separation joints per ASCE 13.5.6.2.2 d., unless calculations are performed to verify accommodation for anticipated lateral displacement.

#### **General and Vertical Support Standards:**

2006 IBC 803.9, ASTM C 635 & 636

#### **Seismic Bracing Standards:**

2006 IBC 1613.1, ACSE 7-05 13.3.1 & 13.5.6, CISCA Zones 3 & 4

**Application:**

The following installation guidelines when applied to conventional system T-bar configurations will be accepted as conforming to code stipulated load calculations, material strength, and deflection criterion for seismic forces:

- 1) Manufacturer's recommendations are a minimum requirement.
- 2) Ceiling grid lengths less than 14 feet between laterally braced (directly to the building structure) walls are exempt from grid bracing item 3) below. Grid lengths 20 feet and greater shall be spaced per item 3). Lengths from 14 feet to less than 20 feet must have one row of splay and strut bracing at mid-length. See Figure 1 below.

**Exception:** Rooms or hallways 10 feet or less in width and surrounded by braced walls.

- 3) 4 way bracing wire (splay) and compression struts shall be spaced 12 feet on center each direction and within 6 feet maximum of each wall.
- 4) System specification shall comply with the prescriptive material and installation details of the following 2 references:
  - a. [Suspension Systems for Acoustic Lay-in Ceilings](#) [Northwest Wall & Ceiling Bureau (NWCB) document 401]
  - b. Seismic (Zones 3 - 4) - Guidelines for Seismic Restraint for Direct-hung Suspended Ceiling Assemblies (CISCA). Order form:  
<http://cisca.org/assets/forms/CISCAPublicationOrderForm-Rev1-08.pdf>

5) Vertical Strut Maximum Lengths:

1/2" EMT	to 5'-0"
3/4" EMT	to 8'-0"
1" EMT	to 10'-0"
2 1/2" x 25 ga metal stud	to 10'-0"
Double 3 5/8" x 25 ga metal stud*	to 15'-0"

\*stitched with #6 tec/sm screw @ 16"o.c.

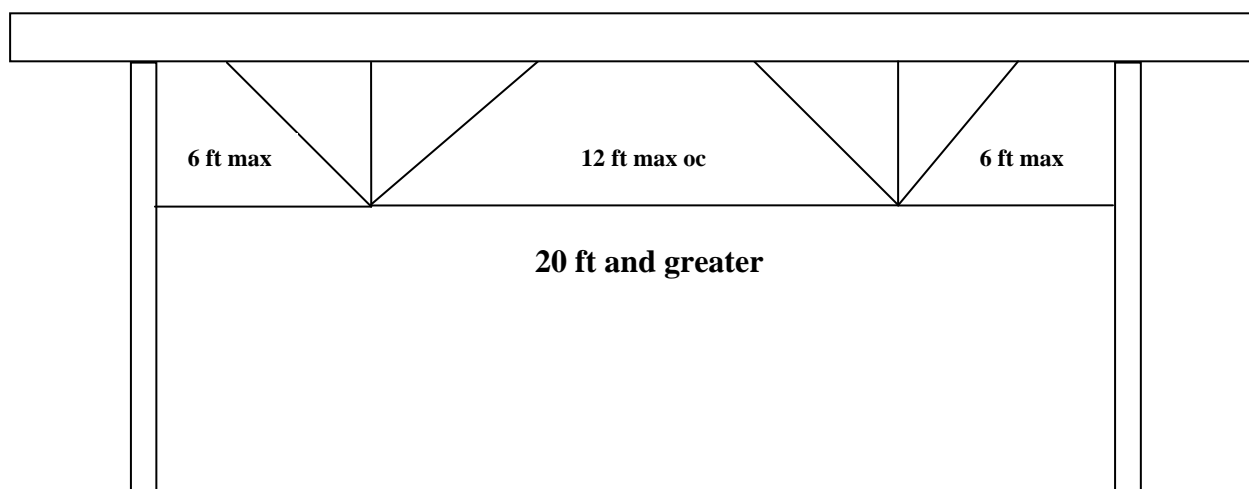
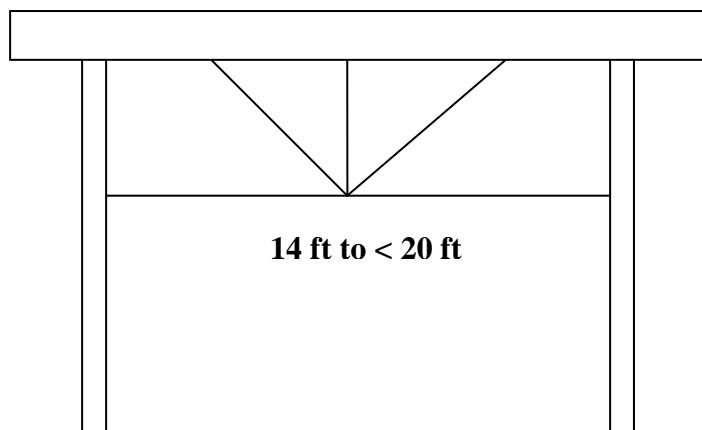
Engineering design is required when struts are more than 15 feet in length.

**Drawing and Pre-Installation Requirements**

- 1) Construction documents shall include system configuration and materials, detailing specifications for grid members, connections, support systems, light and mechanical fixture attachment, and partition supports and bracing.
- 2) Specifications shall note the following:  
 Prior to commencing ceiling work the ceiling contractor and other contractors whose work is related to the ceiling installation shall designate areas of potential interference between required ceiling suspension components and components of other trades.

### Upgrade Policy

When an existing ceiling is altered and the existing ceiling is not seismically braced, the area of alteration must be brought up to current bracing standards. A ceiling is "altered" when the grid or framing is altered.



Splay wire at right angles must also comply with this minimum brace layout (may omit for widths less than 14 feet)

Figure 1

---

<sup>i</sup> "Guidelines for Seismic Restraint for Direct Hung Suspended Ceiling Assemblies" by the *Ceiling and Interior Systems Construction Association (CISCA)*